

I. Transformations (pp.132-136) —

1. Translation (shift up/down/left/right):

$y = f(x) + k$ is $y = f(x)$ shifted vertically
“k” units upward ($k > 0$) or downward ($k < 0$)...

$y = f(x + k)$ is $y = f(x)$ shifted horizontally
“k” units to the left ($k > 0$) or to the right ($k < 0$)...

2. Reflection (180° rotation about coordinate axis):

$y = -f(x)$ is $y = f(x)$ rotated *w.r.t.* x -axis

$y = f(-x)$ is $y = f(x)$ rotated *w.r.t.* y -axis

3. Stretch/shrink (vertical elongation/contraction):

$y = k \cdot f(x)$ is $y = f(x)$ elongated vertically
when $k > 1$ or contracted vertically when $0 < k < 1$, by
a factor of “k”...

II. Examples (p.143): Exercises #12,16

III. Symmetry (pp.138-139) –

the graph of $y = f(x)$ is *symmetric w.r.t.* the...

1. y -axis $\leftrightarrow f(x) = f(-x)$ *a.k.a.* even function
i.e., if (x,y) lies on graph, then $(-x,y)$ lies on graph.
2. origin $\leftrightarrow f(x) = -f(x)$ *a.k.a.* odd function
i.e., if (x,y) lies on graph, then $(-x,-y)$ lies on graph.

IV. Examples (p.144): Exercises #54,58

HW: pp.143-144 / Exercises #1-29(every other odd),
35,47,51,53,59,69-81(odd)